

# A new *Rasbora* s.l. (Pisces : Cyprinidae) from Northern Thailand

by

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With 1 figure

## ABSTRACT

*Rasbora hobelmani*, new species, is described from a small tributary of the headwaters of the Mae Nam Ping in Northern Thailand, close to the Burmese border. The new species is closely related to *R. sumatrana*. Its possible distribution is discussed as well as possibilities of river captures affecting the zoogeography of Indochinese freshwater animals.

Cyprinids of the genus *Rasbora* are tiny to small fishes (from 15 to 150 mm SL) inhabiting a rich variety of habitats, from lakes to lower reaches of mountain streams, in India, South-East Asia and South China. They usually are mid-water dwellers. Some 50 valid species are currently recognized in *Rasbora* s.l. HOWES (1980) separated some species in a new genus, *Parluciosoma*. Sadly, *Rasbora* s.s. has not been diagnosed and it is not exactly known which species actually are true *Rasbora*. For this reason, I tentatively refer the new species herein described as *Rasbora* s.l.

It could be argued that new species should not be described in such speciose genera as *Rasbora*, reputedly polyphyletic (see HOWES 1980), without revising them. There are presently some 40-50 species of Indochinese (*sensu* KOTTELAT, in press a) fishes which await description. I think that describing them is actually the best way to call attention to them and initiate further researches. Additionally, many of them are restricted to very endangered biota, like mountain streams, and would require study, attention and care. Some might become extinct quickly. It seems me that prompt description of these taxa, when they are recognized, is the first step toward their protection. It is simply unconceivable for any official agency to list an 'unnamed' species as needing protection. The species I describe here is known from a single locality.

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RAINBOTH & KOTTELAT (in press) gave a key to the *Rasbora* species in the Mae Khong (official transcription; other spellings: Mekong, Mékong). They briefly discussed a species from this drainage, on the border between Thailand and Burma, described as *R. taytayensis* Herre by HORA & MUKERJI (1934), indicating that this species is apparently new. I collected fishes apparently representing the same species in the northernmost part of the Mae Nam Ping, a tributary of the Mae Nam Chao Phraya in Thailand, an area where several headwater captures might be responsible for peculiar patterns of distribution of aquatic animals.

## MATERIAL AND METHODS

Measurements and counts follow RAINBOTH & KOTTELAT (in press), except for transverse scale counts which include the median scale row at dorsal fin origin (as  $\frac{1}{2}$ ), record the lateral line scale within slashes (/ /) and include the median ventral row anterior to pelvic fin base (as  $\frac{1}{2}$ ). Names of geographic features follow the official transcription on the 1501 S 1:250 000 topographic maps of Thailand.

Abbreviations used are: CMK author's collection; HL Head length; MHNG Muséum d'Histoire naturelle, Genève; SL Standard length.

### *Rasbora hobelmani* n. sp. (Fig. 1a)

Holotype: MHNG 2160.46, 50.1 mm SL; Thailand: Chiang Mai Prov.: 300 m North of Ban Na Hwai (19°38' N, 98°57' E); Kottelat & Hobelman, 23 III 1983.

Paratypes: 33 ex., 16.8-43.6 mm SL; same data; distributed as follow: MHNG 2160.47 (5), NIFI (National Inland Fisheries Institute, Bangkok) uncat. (2), KUMF (Kaset-sart University Museum of Fisheries, Bangkok) 2871 (2), CAS (California Academy of Sciences, San Francisco) 54534 (2), CMK 4113 (22).

Diagnosis: A new species of *Rasbora* s.l. closely allied to *R. sumatrana* and characterized by the combination of the following characters: complete lateral line, perforating 25-27 + 1 scales; 7 scales between lateral lines over the dorsum, on caudal peduncle; dorsal-hypural distance, when carried forward, falling on nostril; origin of dorsal behind posterior margin of pelvic fin base; color pattern consisting of a dark lateral stripe from opercle to caudal base, ending in a precaudal spot. This kind of color pattern is shared with *R. sumatrana* only, from which the new species differs by the lateral stripe being wider on the body between opercle and vertical of dorsal fin than on the caudal peduncle (*vs* of regular width) and somewhat diffuse (*vs* black), a paraxial stripe being distinct (*vs* under lateral stripe). *Rasbora hobelmani* has a deeper head (19.2-22.0 [ $\bar{x}$ : 21.0  $\pm$  1.0 (standard deviation)] % SL, *vs* 17.7-20.1 [19.0  $\pm$  0.7]), a thinner caudal peduncle (height 12.0-13.7 [13.1  $\pm$  0.5], *vs* 13.1-14.6 [13.8  $\pm$  0.4]), shorter caudal fin lobes (upper: 27.8-30.2, *vs* 29.0-33.9) and median caudal rays (14.8-18.9, *vs* 15.7-20.2) and larger eye diameter (9.8-11.4 [9.9  $\pm$  0.4], *vs* 7.9-9.7 [8.9  $\pm$  0.6]).

Morphometric and meristic data (listed in the following sequence: minimum-maximum [mean  $\pm$  standard deviation]): total length 124.8-131.5% SL; head length 27.7-31.0 (29.5  $\pm$  1.1)% SL; predorsal length 53.2-57.7 (55.1  $\pm$  1.4)% SL; prepelvic length 49.1-52.5 (50.7  $\pm$  1.1)% SL; preanal length 67.9-72.6 (70.4  $\pm$  1.3)% SL; body depth 27.8-29.9 (28.7  $\pm$  0.7)% SL, 90-101 (97  $\pm$  3)% HL; head depth 19.2-22.0 (21.0  $\pm$  1.0)% SL, 68-75 (71  $\pm$  2)% HL; depth of caudal peduncle 12.0-13.7 (13.1  $\pm$  0.5)% SL, 41-49 (44  $\pm$  2)%

HL; length of caudal peduncle 20.2-23.4 ( $21.9 \pm 1.2$ )% SL, 72-80 ( $74 \pm 3$ )% HL, 1.44-1.86 ( $1.68 \pm 0.14$ ) times greater than depth of caudal peduncle; interorbital width 10.2-11.5 ( $11.0 \pm 0.5$ )% SL; 34-39% ( $37 \pm 2$ )% HL; eye diameter 9.8-11.4 ( $9.9 \pm 0.4$ )% SL, 27-35 ( $32 \pm 3$ )% HL; snout length 7.6-9.0 ( $8.3 \pm 0.5$ )% SL, 26-31 ( $28 \pm 2$ )% HL; length of last simple dorsal ray 21.8-26.6% SL; length of anal fin 18.8-22.4% SL; length of pectoral fins 19.9-23.6% SL; length of pelvic fins 16.7-18.9% SL; length of upper caudal lobe 27.8-30.2% SL; length of median caudal rays 14.8-18.9% SL, 1.60-2.03 ( $1.83 \pm 0.14$ ) times in length of upper caudal lobe; length of lower caudal lobe 27.9-32.1% SL. D: iii, 7; A: iii, 5; P: 14-15; V: 8-9; C: 9+8 branched rays.

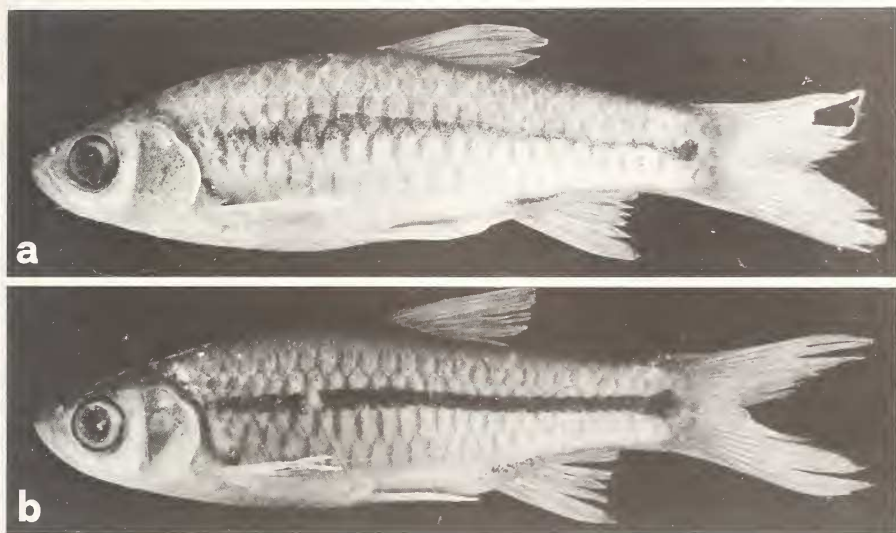


FIG. 1.

- a. *Rasbora hobelmani* n. sp., holotype, MHNG 2160.46;  
 b. *Rasbora sumatrana*, Thailand: Phrao, CMK 4091, 45.9 mm SL.

Lateral line complete, perforating 25 to 27 scales, plus one scale on caudal fin base. Transverse scale counts:  $\frac{1}{2}4/1/2[-3]\frac{1}{2}$  in front of pelvic fin base,  $\frac{1}{2}4/1/1-1\frac{1}{2}$  to pelvic fin base,  $\frac{1}{2}3/1/1\frac{1}{2}$  on caudal peduncle. Predorsal scales 12 (occasionally 11) including a deeply notched one immediately in front of first dorsal ray.

Supero-posterior edge of dorsal fin slightly convex. Pectoral fins do not reach pelvic fin base. Pelvic fins reach anus but not anal fin base, whose posterior edge is straight or slightly concave.

Coloration: Body yellowish-brown, more greyish on the back and head. A black stripe from immediately upper edge of branchial opening to base of caudal fin. This stripe is not very straight and is of irregular width, the part in front of dorsal fin being wider than the one behind. The stripe is expanded in an irregularly shaped spot at its posterior extremity, on the caudal peduncle but not on caudal fin. Crescentic brown basal markings (= reticulate or net pattern of authors) on the scales above and below the stripe and along lateral line. A paraxial stripe immediately above lateral stripe, from

below dorsal fin to caudal peduncle spot. A median dark stripe on the back from head to caudal fin. A black stripe at anal fin base, going on (but brownish and more slightly marked) along ventral edge of caudal peduncle. Head with a dark spot and a yellowish patch behind and below eye. All fins hyalin.

**Etymology:** named for Paul Hobelman, in acknowledgment for his hospitality, friendship, help and enduring me for several weeks of fieldwork.

**Ecology:** The new species has been collected at the type locality only. This was an irregularly shaped pond approximately  $15 \times 6$  m, nowhere deeper than 0.5 m. The bottom was muddy and devoided of any vegetation. The pond was in a marshy area between an afforested area (apparently not primary forest) and rice fields. It had an outlet to a small creek (approximately 1-2 m wide) at its western extremity. Collected at the same locality were '*Barbus orphoides* Valenciennes, 1842, a possibly new noemacheiline related to *N. brunneanus* Annandale, 1918, tadpoles and shrimps.

**Relationships:** The new species seems most closely related to *Rasbora sumatrana* (Bleeker, 1852) (Fig. 1b) which shares the same shape and type of color pattern. For diagnostic characters, see 'diagnosis' above. Additionally, living *R. sumatrana* have a silvery-yellowish body while *R. hobelmani* is yellowish-brown. BRITTAN (1954) described the variation of the color pattern of *R. sumatrana*. The specimens used here for comparison and illustration come from Northern Thailand where they seem to belong to a quite homogeneous population. I did not note any such variation as recorded by Brittan in my material from Thailand, Kampuchea and Viet Nam.

FOWLER (1937) described *R. cheroni* and *R. cromiei* from Pitsanulok (= Changwat Phitsanulok,  $16^{\circ} 49' N$ ,  $100^{\circ} 16' E$ ) and Me Poon (most probably Huai Phun, a creek at approximately  $16^{\circ} 42' N$ ,  $99^{\circ} 30' E$ ) respectively, in central Thailand. These species have been considered as synonyms of *R. sumatrana* by BRITTAN (1954). BRITTAN (p. 60) indicated that he examined 5 paratypes of *R. cromiei* from Trang. This is an error, Trang material being listed by FOWLER (1939) but not in the original description (1937). I tentatively follow Brittan in considering the Indonesian and mainland populations as representing a single species. The status of *R. aurotaenia* Tirant, 1885 and *R. paviei* Tirant, 1885 (correct emendation of *R. paviana* Tirant, 1885 by CHEVEY, 1934) will be discussed in a review of Tirant's nominal species now in preparation.

The new species also bears some resemblances with *R. volzi* Popta, 1905 as illustrated and described by BRITTAN (1954). It is recorded from Borneo only and is easily distinguished by more numerous lateral line scales (29-33, vs 25-27). However, the color pattern of *R. hobelmani*, and particularly the lateral stripe behind dorsal origin, is more distinct.

A few other species have a dark lateral stripe and a pre-caudal or caudal spot: *R. urophthalma* Ahl, 1922, a tiny species without lateral line, from Sumatra, Borneo, Indochina; *R. sp. nov.* Rainboth & Kottelat (in press) with conspicuous black markings on anal, dorsal and caudal fins and an incomplete lateral line from lower Mae Khong.

HORA & MUKERJI (1934) described two specimens that they tentatively placed in *R. taytayensis* Herre, 1924. They came from Nam Mae Hsai, a tributary of the Mae Khong forming the border between Burma and Thailand. BRITTAN (1954: 186-187) tentatively considered them as *Rasbora rasbora* (Hamilton, 1822). According to HORA & MUKERJI's description and illustration, these specimens seem to belong to *R. hobelmani*. The main difference is that they have a lateral line piercing only 18-20 of 24-26 scales (vs complete). According to BRITTAN (1954) description and key, *R. rasbora* is distinguished from *R. hobelmani* by a well defined black hind margin of caudal fin



(vs caudal fin hyalin), 26-29 + 2 scales along lateral line (vs 25-27 + 1), a shorter predorsal length (dorsal-hypural distance, when carried forward, falling at the anterior border of eye, vs on or in front of nostril), and a lateral stripe of regular width and not ending in a precaudal spot.

*Rasbora taytayensis* is considered as a synonym of *R. semilineata* Weber & de Beaufort, 1916 by BRITTAN (1954). *Rasbora semilineata* is known from Borneo (WEBER & DE BEAUFORT 1916) and Palawan Island, Philippines (HERRE 1924) and is distinguished by an incomplete lateral line (vs complete) piercing up to 15 scales, a deeper body (3.0-3.5 times in SL, vs 3.3-3.6), more lateral scale rows (27-31. vs 25-27).

### ZOOGEOGRAPHIC REMARKS

*Rasbora hobelmani* is known only from the type locality and possibly from the Nam Mae Hsai, both in headwater areas. The type locality is in the Mae Nam Ping drainage and the Nam Mae Hsai in the Mae Khong drainage. At the type locality, I collected a noemacheiline loach which also occurs in the Nam Mae Fang and the Nam Mae Lao, both tributaries of the Nam Mae Kok, a river entering the Mae Khong approximately 20 km downriver of the Nam Ruak of which the Nam Mae Hsai is a tributary. This noemacheiline is closely related or possibly identical with *Noemacheilus brunneanus* Annandale, 1918, described from Inle Lake drainage in the Salween basin (ANNANDALE, 1918; HORA, 1929). A possible similar Upper Mae Nam Ping — Mae Kok pattern is exhibited by the pair *Tukugobius chiengmaiensis* (Fowler, 1934), collected in or above Chieng Dao gorges, and *T. mekongianus* (Pellegrin & Fang, 1940) (discussed as '*Ctenogobius*' *mekongianus* by KOTTELAT, 1983) from the Mae Khong drainage of Northern Thailand and Laos. *Parabarilius laoensis* Pellegrin & Fang, 1940, formerly known from the northern Thai and Laotian Mae Khong drainage (KOTTELAT 1983) also occurs (pers. obs.) in the Mae Nam Ping drainage east of Chieng Dao. Its possible identity with *Danio shanensis* Hora, 1928 and relationships of *Danio* and *Parabarilius* are currently investigated. *Danio shanensis* also seems widely distributed in the Salween drainage of Burma.

Topographic observations in the field and on maps provide some possible evidence of river and headwater captures in this area but geological evidences by competent geomorphologists are sorrily lacking and I do not think that it would be the place and time to formulate any geomorphologic hypothesis here. But it might be noted that species otherly known from the Mae Khong occur in the Mae Nam Ping above Chieng Dao gorges. I did not collect *Rasbora sumatrana* above these gorges where it might be replaced by *Parabarilius laoensis* which apparently has the same ecological requirements. In the Mae Khong basin, *R. sumatrana* occurs widely in the drainages downriver of Vientiane (see for example TAKI 1974, 1978; KOTTELAT, in press a). The only record upstream of Vientiane I am aware of is by LI (1976) as *R. cromiei* from the Lancang Jiang (the Chinese name of Mae Khong), in Xishuangbanna, Yunnan Province. Sorrily the record cannot be checked, being not accompanied by a description.

It might be the place to point out that the great number of species (endemic or not) present in this area (North Thailand, Laos, Viet Nam, Burma, Yunnan) is certainly not to be interpreted as a center of speciation but merely as the result of a geomorphologically very active area with numerous river captures being responsible of repeated isolation of a great number of populations who gave rise to numerous species, many of them (particularly rheophilic ones) with restricted distribution. I doubt that long range

dispersal (as advocated for example by MENON 1964) of rheophilic fishes is very realistic and can be sustained by geological and palaeontological facts, and sound phylogenetic analysis.

*Noemacheilus brunneanus* mentioned above has been made type species of *Physoschistura* Banareescu & Nalbant, in SINGH *et al.* 1982. I gave elsewhere (KOTTELAT 1982, in press *b*) my reasons for temporarily keeping most noemacheilines in *Noemacheilus*. Preliminary results of ongoing researches on noemacheilin phylogenetics show that all characters used by BANARESCU & NALBANT for defining *Physoschistura* evolved separately in several lineages (incomplete lateral line, number of branched dorsal rays, shape of air bladder and its bony capsule) or are plesiomorphic (colour pattern, processus dentiformis). Additionally, from the description in SINGH *et al.* (1982), *N. elongatus* (SEN & NALBANT 1982) does not seem so closely related to *N. brunneanus* as are some Burmese species.

Comparison material: *Rasbora sumatrana*. Thailand: Chiang Mai Prov.: CMK 4091, 33 ex., 22.0-45.2 mm SL; km 65 on road 1001 from Chiang Mai to Phrao (29 km before Phrao, 19° 06' N, 99° 10' E), tributary of the Nam Mae Khot; Kottelat & Hobelman, 22 III 1983. — CMK 4078, 20 ex., 12.3-47.0 mm SL; Nam Mae Tha Chang (18° 46' N, 99° 15' E); Kottelat & Hobelman, 13 III 1983.

Additional material of *R. sumatrana*, not used for morphometric analysis, came from Thailand (CMK, collected in 1983; MHNG, collected by me in 1980), Kampuchea (see KOTTELAT, in press *a*), Viet Nam (examined in Naturhistoriska Riksmuseet, Stockholm) and Western Malaysia (CMK).

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